

# **Left Ventricular Reconstruction and Bypass grafting on beating heart settings Off-pump ventriculoplasty**



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Cardiosurgery - Skopje



# Off-pump ventriculoplasty

- Aneurysm incidence after myocardial infarction-10-30%
- 70% of patients in recent CHF trials had an ischemic cardiomyopathy

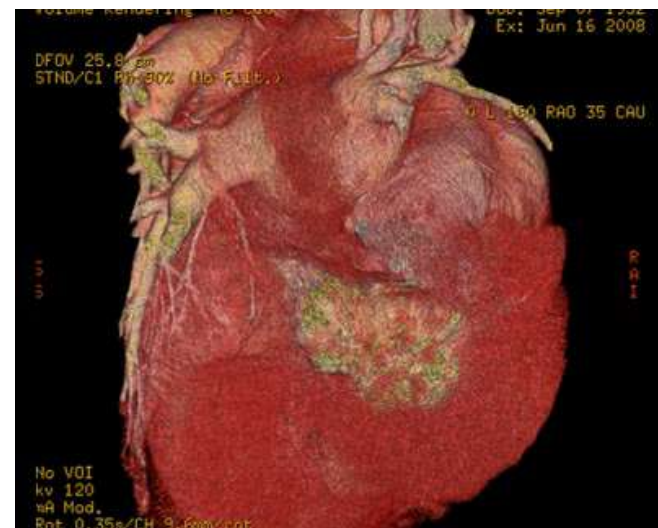
## Localisation:

85%-anterior wall (LAD occlusion)

5-10% posterior wall (RCA occlusion)

<5% lateral wall (OM)

– *Georghiade, Circ. 1998*



# Off-pump ventriculoplasty

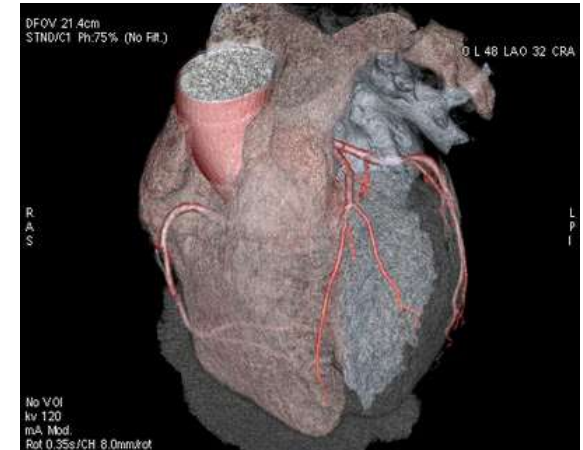
## Surgical remodeling for heart Failure

### Theory behind treatment

- ↓EDV
- myocardial revascularisation

### Surgical techniques

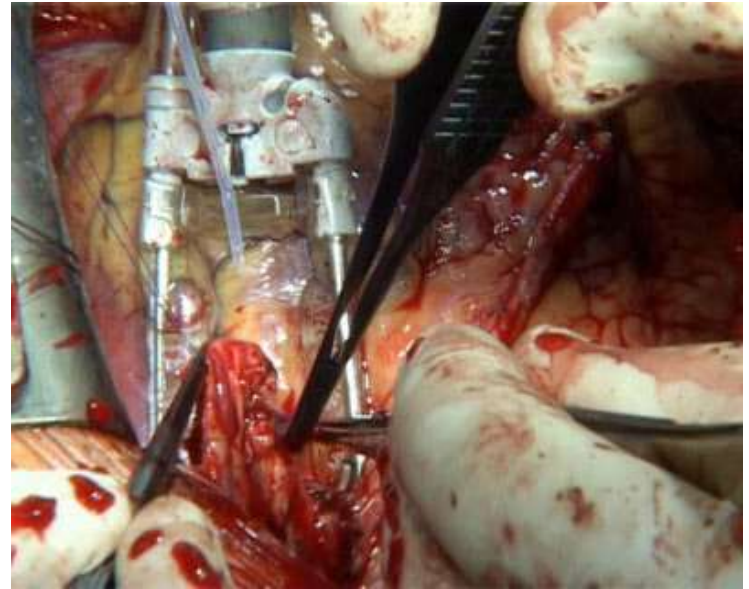
- Surgical technique with open left chamber on pump without cardioplegy (Jaten,Batista,Cooly)  
on pump with cardioplegy (Dor,Mc Cartny)
  - Surgical technique without open left chamber (LV plication)
- Multy risk patients;high morbidity and mortality



# Off-pump ventriculoplasty- our technique

## Goals:

- Adequate surgery technique to patient condition
- Remodeling with ↓EDV
- Revascularisation
- Minimal invasive anesthesie
- Avoidance of intra and post operative complication
- Early mobilisation
- Low complication and mortality



# Surgery for patients with terminal ischemic heart-ventriculoplasty & by-pass surgery N-722 (14,4%)



**Direct circular repair for anterior left ventricle aneurysm N=433pts-79 are without cardioplegia**

**Haemodynamic parameters:**

**EDV=345 ± 33.4ml    EF=27 ± 6.2%**

**ESV= 259 ± 26.5ml    Mortality rate -5,6 (21 pts)**



**Surgery- ventriculoplasty with posterior cuneate or separate posterior linear reconstruction N=96 pts**

**Haemodynamic parameters:**

**EDV=367 ± 23.5ml    EF=25 ± 5.6%**

**ESV= 299 ± 22.4ml    Mortality rate 4 (5,6) % pts**



**Transventricular mitral valve reconstruction for pts with LV aneurysm and mitral valve insuff N=56pts**

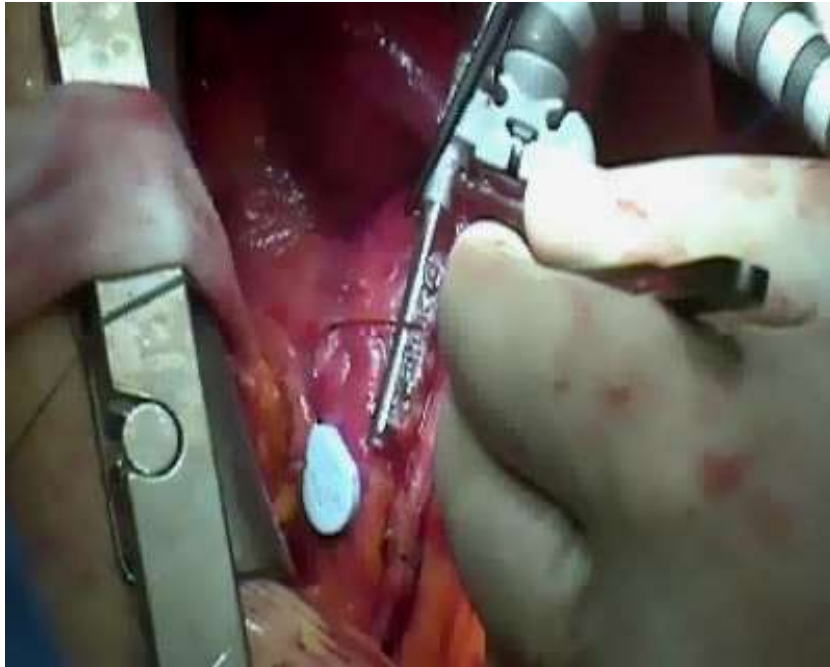
**EDV=367 ± 23.5ml    EF=25 ± 5.6%**

**ESV= 299 ± 22.4ml    Mortality rate 4 (8,6 %) pts**





# Surgery for patients in cardiogenic shock N=96pts



**Haemodynamic stabilization**

**Pre-operative IABP 5**

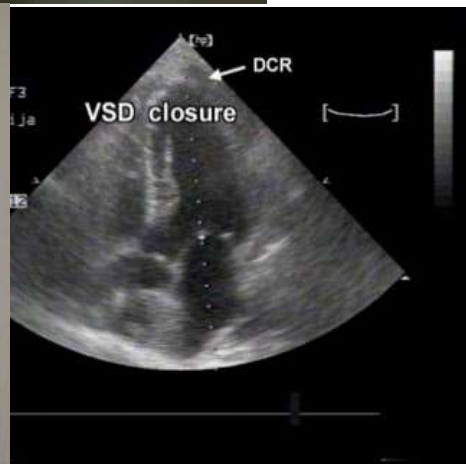
**Catecholamine if necessary**

**39-without cardioplagia**

**Post infarction VSD - 5 (6%)**

**Strategy - IABP,**

- haemodynamic stabilization
- operation



**Haemodynamic parameters:**

**EDV=232 ± 30.4ml      EF=25 ± 4.2%**

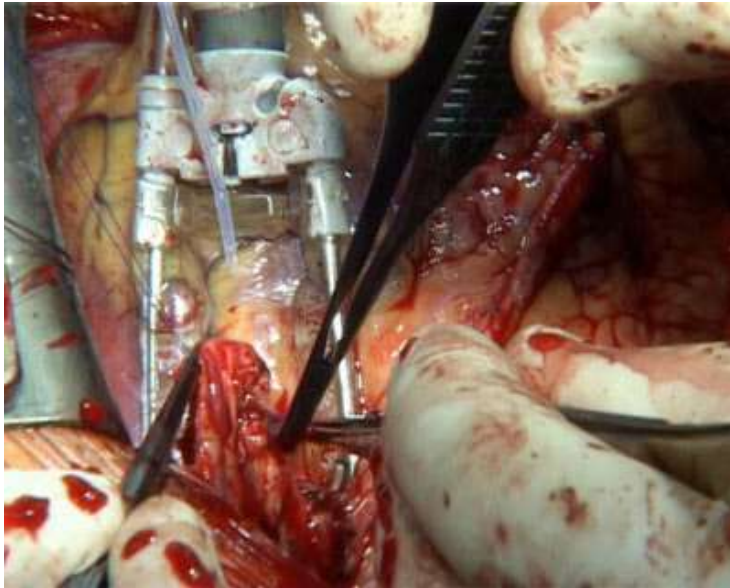
**ESV= 189 ± 28.5ml**

**Mortality rate 4( 4.3%)**



# **Off-pump ventriculoplasty- our technique**

## **Selective group – 44pts**



### **Including criteria**

- Suitable coronary status for revascularisation**
- LV aneurysm with a scar- antero-apical region, without septum involvement**
- Renal insufficiency,**
- Previous cerebrovascular insult,**
- Atherosclerotic degeneration of the ascending aorta**
- Respiratory failure**

### **Excluding criteria**

- Mitral insufficiency**
- Extremely large LV chamber**
- LV thrombus**



# Off-pump ventriculoplasty

## Patient demographics data (N : 44)

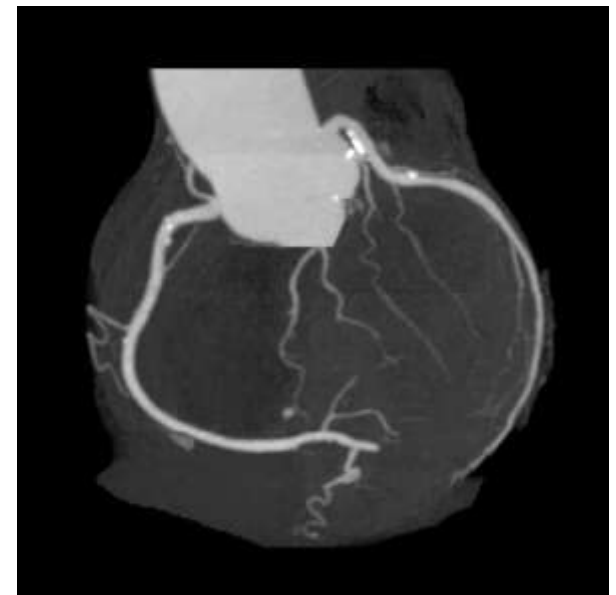
|                   |            |
|-------------------|------------|
| Age (years)       | 59.5 ± 7.2 |
| Sex (f/m)         | 8 / 36     |
| Unstable angina   | n : 25pts  |
| Preoperative IABP | n : 5pts   |

### Coronarography finding

LAD 100% (n : 44)

LAD 100%; Cx 90% (n:8)

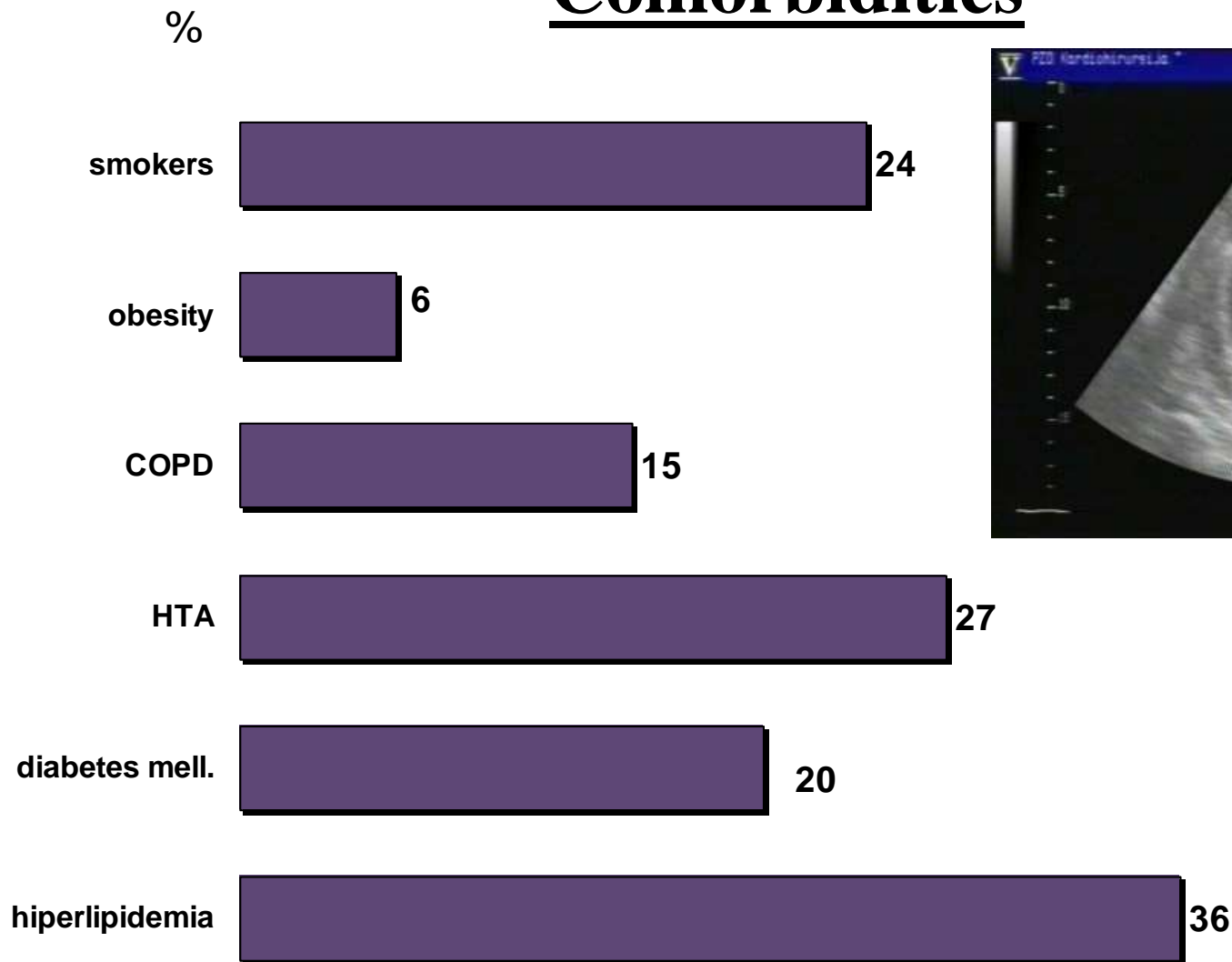
LAD 100%; Cx 90%; RCA 90% (n:10)



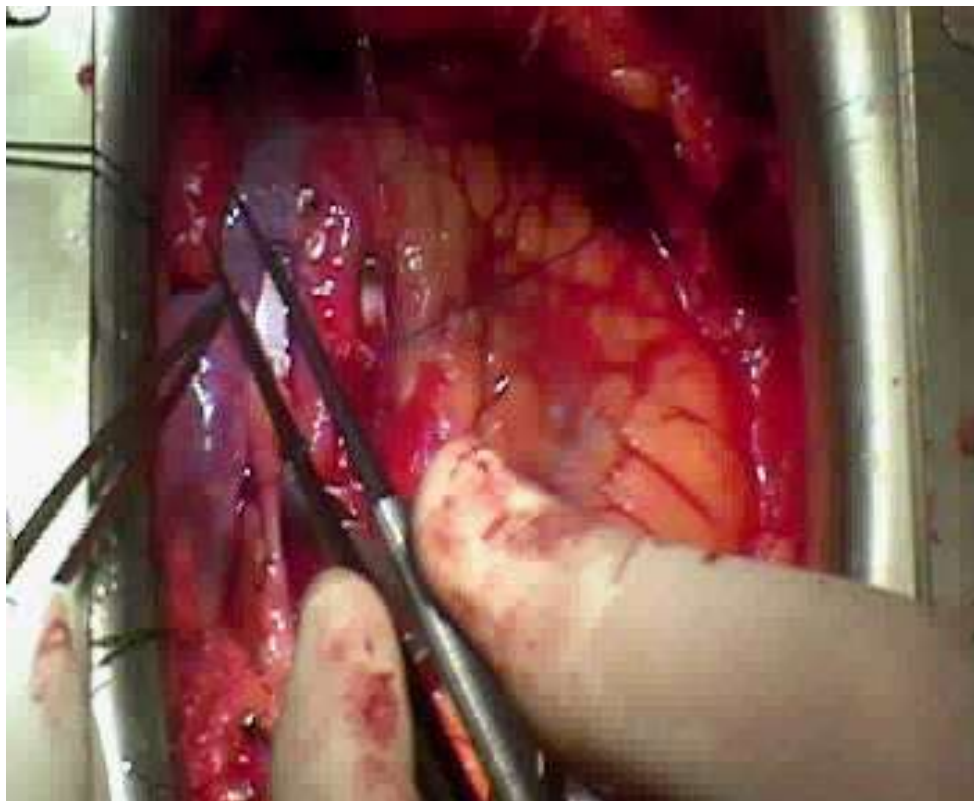


# Off-pump ventriculoplasty

## Comorbidities



# Off-pump ventriculoplasty



- - Median sternotomy
- - Heart stabilizator –
- - Epidural anesthesia



# **Off-pump ventriculoplasty**

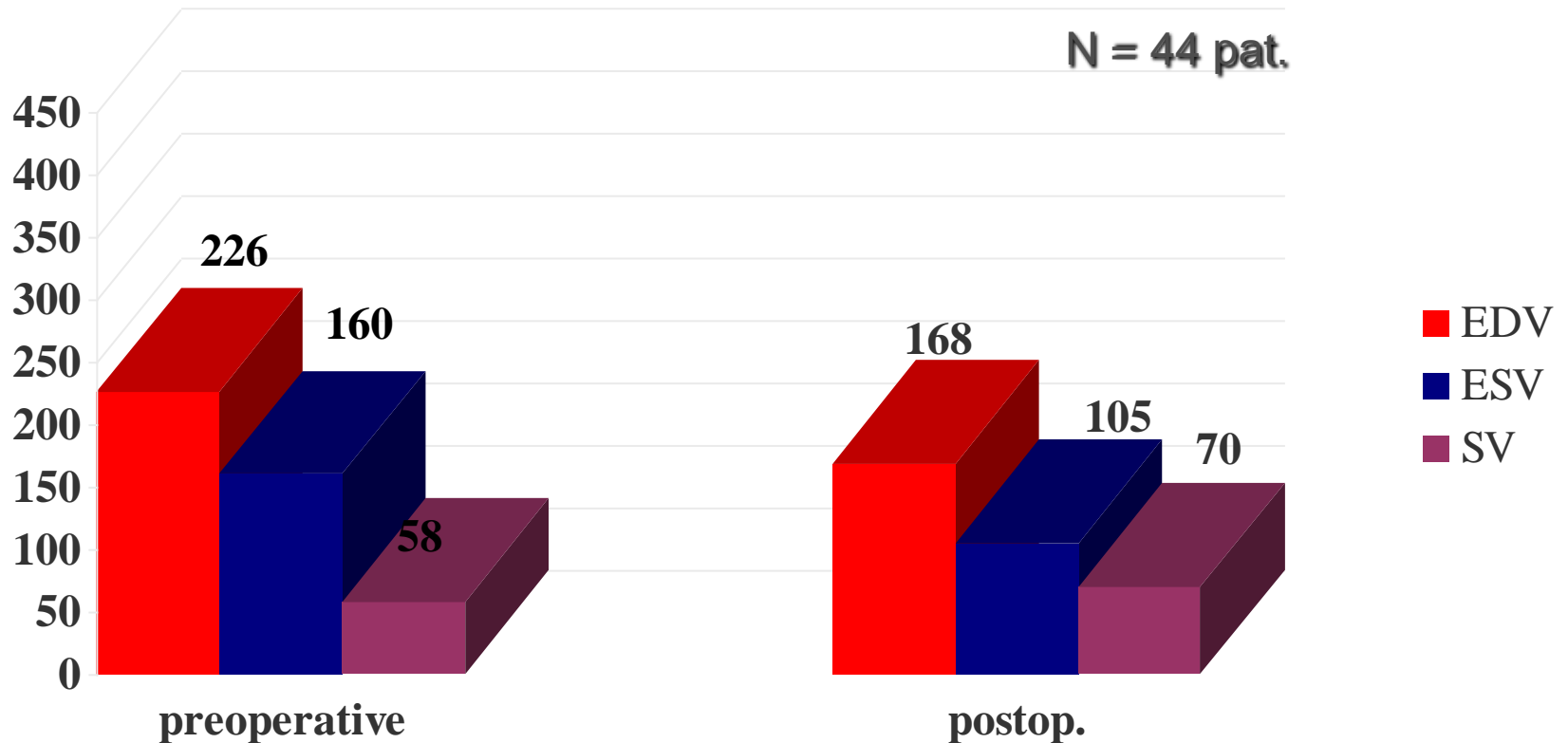
## **Results : ICU data N : 44**

- **Extubation time (h)** **6.8 2,3**
- **Weaning of IABP (day)** **3**
- **Media-low catecholamine dosage 0,13-0,29 $\mu$ g/kg/min**
- **Need of blood products EK/pts (8pts)** **1.8**
- **Wound infection** **0**
- **Early mobilization (day)** **1**
- **One day ICU stay** **85%pts**
- **Post-operative in hospital stay(days)** **7,6  $\pm$  2,3**
- **Mortality rate** **0**



# Off-pump ventriculoplasty

## Significant improvement in hemodynamic parameters



EF  $<20 \pm 2.3\%$

CI  $<1.8 \pm 0.9$

LVSWI =  $22,5 \pm 3.5$

Follow up 96months

EF  $34 \pm 5.4\%$

CI  $>3.4 \pm 0.89$

LVSWI =  $45 \pm 9.2$



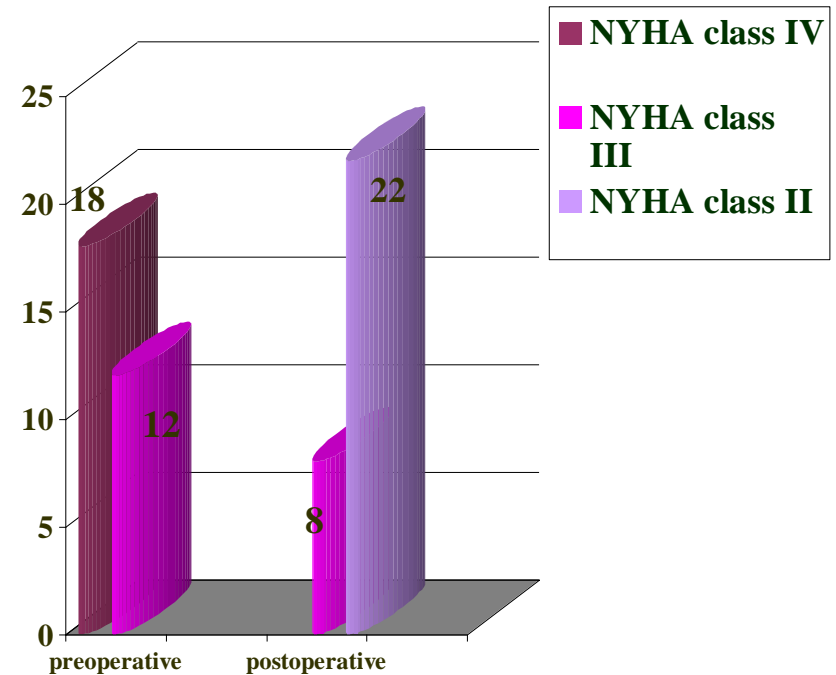
# Off-pump ventriculoplasty

## Follow up period 1– 96 months

- Individual medicamentous treatment:
  - ACE inhibitors
  - $\beta$ -blockers
  - ( after cathecholamines )
  - spironolacton ( first post op.day )
  - diuretics

No late complications

- Late mortality rate 0



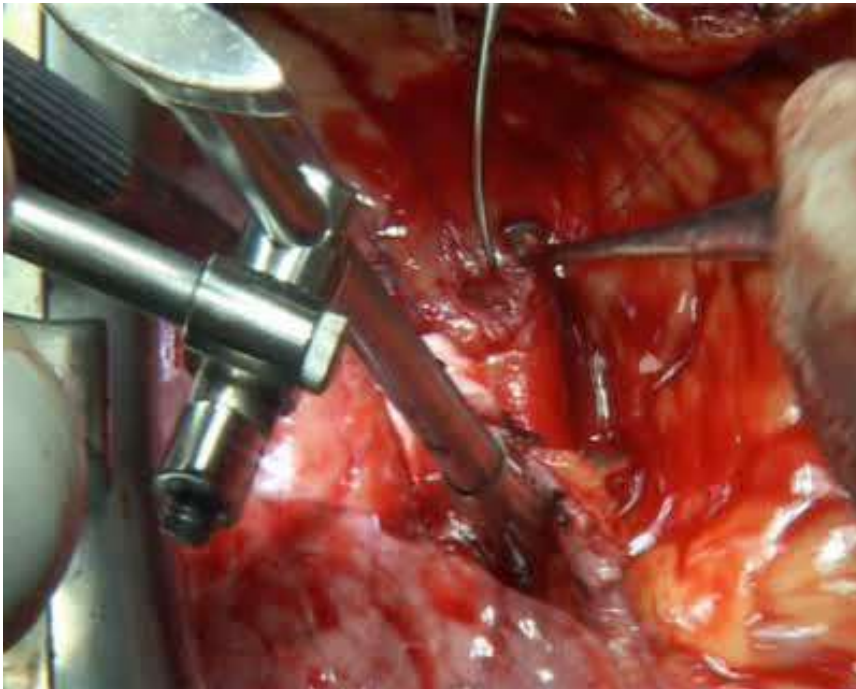
NYHA class





# Off-pump ventriculoplast

## Comment:



- Off pump surgery for left ventricle reconstruction is a save procedure for selected patients**
- Patients have excellent clinical outcome**





*Cardiosurgery - Skopje*

